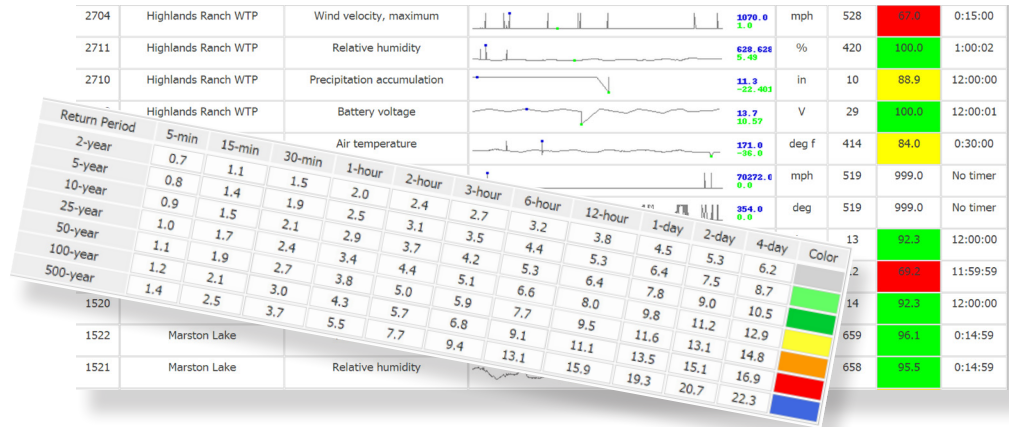


Site	Sensor ID	5-min	15-min	30-min	1-hour	2-hour	3-hour	6-hour	12-hour	1-day	2-day	4-day
Houston Transtar	1000	0.2	0.3	0.4	0.6	1.0	1.2	1.5	1.7	1.9	1.9	2.7
D109 Harris Gully @ South McGregor Way	400	0.8	1.5	2.4	4.0	7.0	7.7	8.8	10.5	10.5	12.3	13.3
D100 Brays Bayou @ Lawndale Street	410	0.7	1.3	2.2	3.7	6.3	7.0	8.9	13.1	13.1	14.1	21.3
D100 Brays Bayou @ South Main Street	420	0.6	1.5	2.4	4.0	6.7	8.5	8.5	12.0	12.1	13.3	15.0
D100 Brays Bayou @ Stella Link Road	430	0.6	1.5	2.3	4.0	6.5	7.8	9.6	11.3	11.4	13.1	15.7



Contrail® Analytics

Suite of flexible integrated data-analysis tools that extends the power of Contrail

Contrail Analytics provides a comprehensive toolset that helps you quickly analyze Contrail data sets, identify and highlight trends and changes, and gain true insight into the performance of your hydromet sensor network.

HIGHLIGHTS

- Reduces mountains of data into a simple, visual display
- Discover trends in precipitation events with rainfall frequency and distribution information
- Provides the analyses you need to make better decisions and improve the management of your hydromet network
- Presents complex information in easy to analyze visual charts and graphics
- Insightful views reveal the essential information you need to manage your sensor network
- Bulk event data exporting
- Time-Series Export

Powerful Data Analysis and Reporting Tools

Contrail Analytics delivers powerful web-based data analysis and reporting tools including hydro-meteorological trends, telemetry system activity and maintenance performance:

- Rainfall Intensities:** rainfall event analysis reports classify the amounts of accumulated rainfall by recurrence intervals over time
- Mass Balance Rainfall Analysis:** plots and compares multiple rain gauges
- Sensor Network Monitoring:** sensor activity and performance over time
- Bulk Exporting:** event data
- Time Series Data Export:** rainfall and other sensors

Identify Patterns, Trends and Extreme Storm Events

It's easy to generate sensor-level snapshots of hydro-meteorologic activity over periods of interest to quickly answer questions such as:

- How much did it rain this spring?
- What were the high and low temperatures at this site last year?
- Which stream showed the greatest change in stage last July?

*Included only with Contrail Base Station and Contrail Server
(not available with Contrail Web)*

	A	B	C	D	E	F	G	H	I	J	K
1	ALERT2 - All Sites (new id = 296)										
2	Start time: 2012-05-07 00:00:00										
3	End time: 2012-05-09 00:00:00										
4	All Timestamps are in local time and mark end of interval										
5	Interval: 15-min										
6	Null interval fill method: fill with zero value										
7											
8											
9	Site	1000	140	1420	1440	1460	1520	1570	1640	1660	1700
10	Sensor	1000	140	1420	1440	1460	1520	1570	1640	1660	1700
11	5/7/2012 0:15	0	0	0	0	0	0	0	0	0	0
12	5/7/2012 0:30	0	0	0	0	0	0	0	0	0	0
13	5/7/2012 0:45	0.04	0	0	0	0	0	0	0	0	0
14	5/7/2012 1:00	0	0	0	0	0	0	0	0	0	0
15	5/7/2012 1:15	0	0	0.04	0	0	0.04	0	0	0	0
16	5/7/2012 1:30	0.04	0	0	0	0	0	0	0	0	0.04
17	5/7/2012 1:45	0	0	0.04	0	0	0.04	0	0	0	0
18	5/7/2012 2:00	0	0	0	0	0	0.04	0	0	0	0
19	5/7/2012 2:15	0	0	0	0	0	0	0	0	0	0
20	5/7/2012 2:30	0	0	0	0	0	0	0	0	0	0
21	5/7/2012 2:45	0	0	0	0	0	0	0	0	0	0
22	5/7/2012 3:00	0	0	0	0	0	0.04	0	0	0	0
23	5/7/2012 3:15	0	0	0	0	0	0	0	0	0	0
24	5/7/2012 3:30	0	0	0	0	0	0	0	0	0	0

Rainfall Intensity Reports

The frequency analysis of rainfall data are of great importance to engineers and others involved in flood plain management, the design and operation of structures such as storm sewers, dams, reservoirs and hydropower operations that can be affected by heavy rainfall events.

- **Duration** - The length of time over which precipitation occurs (hours).
- **Depth** - The amount of precipitation occurring throughout the storm duration (inches).
- **Frequency** - The recurrence interval of events having the same duration and volume.
- **Intensity** - The depth divided by the duration (inches per hour).

Contrail Analytics derives the maximum rainfall intensities for a set of user-specified storm durations (e.g., 5-min, 15-min, 30-min, 1-hour, 2-hour, 3-hour, 6-hour, 12-hour, 1-day, 2-day, 4-day...), and presents the results in an easy-to-read graphic output that color highlights the recurrence interval for those peak intensity events (e.g., 5-year, 10-year, 25 year...).

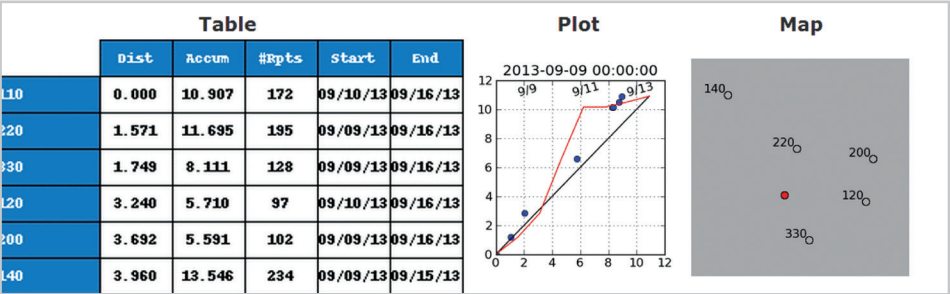
Rainfall Intensities

Inches of rainfall

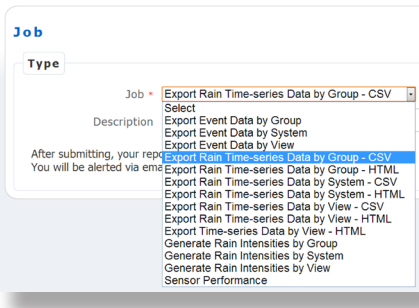
Site	Sensor ID	5-min	15-min	30-min	1-hour	2-hour	3-hour	6-hour	12-hour	1-day	2-day	4-day
P100 Greens Bayou @ Mount Houston Parkway	1600	0.7	1.5	2.7	5.8	9.3	13.5	21.2	28.3	28.5	28.7	38.5
P100 Greens Bayou @ Normandy Street	1610	0.6	1.1	3.2	4.0	2.5	9.2	9.2	11.3	11.7	12.8	18.4
P100 Greens Bayou @ Ley Road	1620	0.9	2.1	1.7	6.5	9.8	11.6	15.8	26.4	26.7	26.8	34.5
P130 Garners Bayou @ Beltway 8	1630	0.5	1.4	2.5	4.3	8.0	10.2	14.6	17.8	17.8	18.0	24.6
P100 Greens Bayou @ US 59	1640	0.4	0.8	1.5	2.4	3.8	5.4	8.6	11.0	11.0	11.0	14.9
P100 Greens Bayou @ Beltway 8	1645	0.6	1.4	2.3	3.6	5.5	7.0	11.3	14.9	15.0	15.2	23.6
P130 Garners Bayou @ Rankin Road	1650	0.5	1.2	2.2	3.4	5.5	7.4	10.8	12.4	12.4	12.4	16.3
P100 Greens Bayou @ Knobcrest Drive	1660	0.5	0.9	1.5	2.1	3.7	4.4	7.8	10.1	10.1	10.3	15.1
P100 Greens Bayou @ Bammel N Houston Road	1665	0.6	1.4	2.5	4.9	6.1	8.0	11.5	15.7	15.8	16.0	19.9
P100 Greens Bayou @ Cutten Road	1670	0.4	0.9	1.7	3.0	4.8	6.6	8.7	14.3	14.4	14.4	17.5
P118 Halls Bayou @ Tidwell Road	1675	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
P118 Halls Bayou @ Jensen Drive	1680	0.5	1.3	2.0	2.7	4.2	5.4	8.6	11.4	11.4	11.5	17.4
P100 Greens Bayou @ Tidwell Road	1685	11.9	2.2	4.2	6.3	9.4	11.5	16.1	25.8	26.4	26.5	33.9
P118 Halls Bayou @ Airline Drive	1690	0.5	0.9	1.7	3.2	5.7	7.5	10.7	14.9	14.9	15.0	19.9
P138 @ Aldine Westfield Road	1695	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Set cumulative rainfall intensity duration thresholds and color codes to highlight significant events

The color coding feature enhances viewing and helps you easily identify extreme storm events by automatically marking results in the tabular report for data that fall above or below certain thresholds based on your criteria and color coded scheme.



Double Mass Analysis compares each rain gauge to the five closest neighboring gauges



Sensor Network Performance Monitoring

Knowing how your network and sensors are performing now and over time is critical to operating any automated data collection network. Most base station software gives you a view of what is up or down right now. Wouldn't it be desirable to have real insight and see at a glance which sensors are having problems, which have gaps in reporting, and which are over-reporting?

Contrail Analytics provides a sensor-level snapshot of hydrometeorologic activity over the period of interest. Insightful views provide the essential information you need to understand the behavior of each component of your network.

ID	Site	Sensor	Sparkline	Units	# Reports	Availability %	Timer Interval
1629	S Platte @ Dart	Stage		ft	203	999.0	No timer
1629	S Platte @ Dart	Flow Volume		cfs	200	999.0	No timer
1635	S Platte @ Dart	Battery voltage		V	12	83.3	11:57:57
1640	SPR at Union Ave.	Precipitation accumulation		in	15	92.3	11:58:00
1645	SPR at Union Ave.	Battery voltage		V	14	100.0	11:57:53
1370	Fire Station 13	Precipitation accumulation		in	19	100.0	11:58:00
1375	Fire Station 13	Battery voltage		V	14	100.0	11:57:57
2704	Highlands Ranch WTP	Wind velocity, maximum		mph	398	51.0	0:15:00
2711	Highlands Ranch WTP	Relative humidity		%	368	73.0	0:29:58
2710	Highlands Ranch WTP	Precipitation accumulation		in	18	100.0	12:00:00

Contrail Analytics provides a thumbnail view of how your sensors are working by digesting large amounts of information into easily understood monitoring system performance measures. Contrail Analytics serves four primary functions:

- **Analyze:** Quickly sift through archived data
- **Explore:** Identify issues with sites and sensors
- **Predict:** Enable you to extrapolate trends easily
- **Summarize:** Provide reports on data quality and system performance

Save, Export and Share your Data

Contrail Analytics provides a convenient way to perform time series exports and bulk event data exports to standard data exchange format CSV files.

Contact Us

For more information about OneRain’s Contrail products, visit onerain.com or call 1-800-758-RAIN (7246) or 303-774-2033.



Logs

1 to 7 of 7 Log(s)

Add +

Completed	Type	Status	User
2013-03-25 10:47:26	Sensor Performance	COMPLETE	OneRain
2013-02-26 10:17:34	Sensor Performance	COMPLETE	OneRain
2013-02-26 09:10:58	Sensor Performance	COMPLETE	OneRain
2013-01-04 11:50:23	Sensor Performance	COMPLETE	OneRain
2012-12-28 09:23:30	Generate Rain Intensities by View	COMPLETE	OneRain
2012-12-28 09:22:39	Export Rain Time-series Data by View - CSV	COMPLETE	OneRain
2012-12-28 09:21:41	Sensor Performance	COMPLETE	OneRain

Plan Predictive Maintenance

Contrail Analytics uses data analysis to track system performance and plan predictive maintenance. By monitoring gauge and telemetry performance, maintenance planners are able to analyze trends in performance and provide awareness of irregularities before they affect operations.

Preventive maintenance is a common activity for remote measurement stations. Frequency based maintenance helps us to know that things are working as designed. Unfortunately, preventive maintenance doesn't catch all problems and breakdown maintenance becomes a necessity. Breakdown maintenance can be time consuming, costly and causes increased risk while the site is down.

Effective predictive maintenance uses many techniques, some which are field activities and some based solely on telemetered data. Contrail Base Station keeps a history of sensor data available to conduct performance analyses that support predictive maintenance activities.

Contrail Analytics uses three different approaches to analyze environmental monitoring data, including hydro-meteorological trends, telemetry system activity and maintenance performance. These analyses generate graphs and reports on data source availability and data trends that enable you either to have confidence in your system and maintenance provider, or to know that neither the system nor provider are performing as they should.

Contrail Analytics helps to detect both common and rare failure modes before problems occur. By distilling the data into manageable reports and presenting the critical metrics of a system's health, Contrail Analytics improves performance, increases system confidence and reduces costs.

OneRain
The Rainfall Company

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T: 303-774-2033
Toll Free: 800-758-RAIN (7246)
Email: sales@onerain.com
www.onerain.com



Experts measuring rainfall and its consequences™